

- Ovary has 2 imp fn

a) To produce the fertilisable gamete in form of ova.

b) To produce the hormone which can maintain the female rep. tract for successful maintenance of pregnancy and parturition.

To perform the 2 functions - these have 2 imp. functional units i.e.

a) Follicle (to produce ovum)

b) Corpus luteum (to produce progesterone)

- In case of humans, menstrual cycle has 2 imp. phases. a) follicular phase b) luteal phase

In foll. phase, follicle reach to maturity to produce a fertilisable gamete. They attain competence during follicular phase.

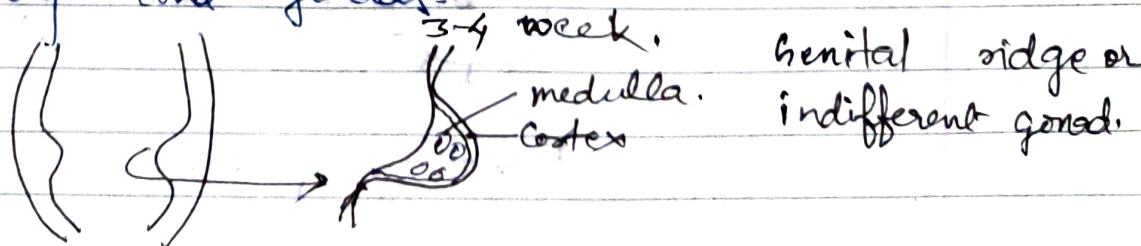
① Gonad. ^{and kidney} (Ovary or testis) - mesodermal origin.

Germ cells (epithelial layer) - endodermal "

Germ cells are originated from yolk sac (extra-embryonic memb.) in 3rd - 4th week.

- Germ cells are larger than other somatic cells of embryo. ≈ 100 germ cells are originated from yolk sac and move to embryonic ^{genital ridge} ~~embryonic sac~~ by amoeboid movement. At this time they are modified.

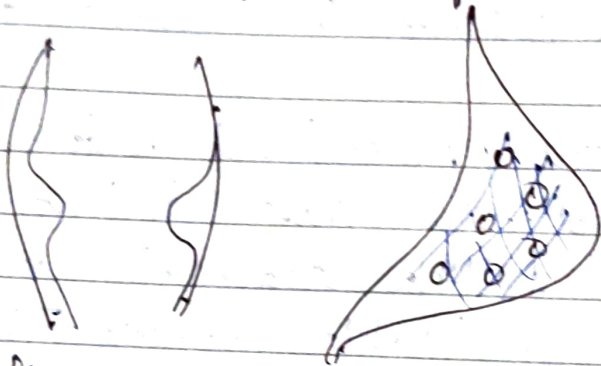
② Mesonephros is area which give rise to ovaries. At that time there is no differentiation of kidney and gonads.



→ Depending upon genetic gene, the genital ridge will be converted into specific type of gonad i.e.

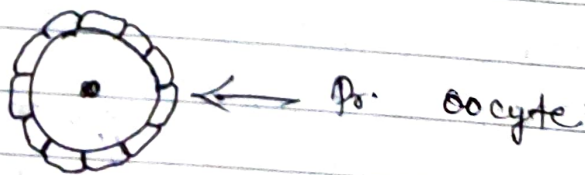
if SRY gene present then → Testis formed
" absent " → Ovary "

- Mesonephros is converted into seminiferous tubule. There is no SRY gene which lead to formⁿ of ovary.



In case of female, medulla is replaced and case of male cortex is replaced (reduced) and give rise to respective gonad.

- After 8 weeks differentiation of gonad is completed.
- Just before birth no. of follicle reaches 6-7 million as it ~~is~~ PGC proliferate in foetal life.
- Once birth is taken place, no PGC proliferate and no more follicles are added. There is continuous depletion. After no more mitotic division. At this time they are covered by single germinal epithelium which is w/a primordial germ cells.



Primordial follicle

* These follicles which are not surrounded by primordial germ cells, become atrophied.

→ Now the follicles are no. reduces upto 25 million at time of birth.

All 2-5 million ^{primordial} follicle / germ cell will enter in the process of meiosis. Process of meiosis start around time of birth. Early part of prophase is completed but not complete prophase and they undergo

- Meiotic arrest. They are under the state of prophase I and it is c/a check point. This prophase I is completed at time of ovulation.

- There are 2 check points. Here complete meiosis doesn't occur b'coz egg has to perform a very imp. function. In early stage of development they are unable to perform that function as they haven't attained maturity.

1st check point = meiotic arrest in prophase I
2nd check pt = at the time of ovulation (metaphase-II)

When LH surge comes, it triggers some changes in oocyte and lead to completion of meiosis I (prophase I and afterward).

For completion of meiosis MPF is required which is produced at the time of ovulation.

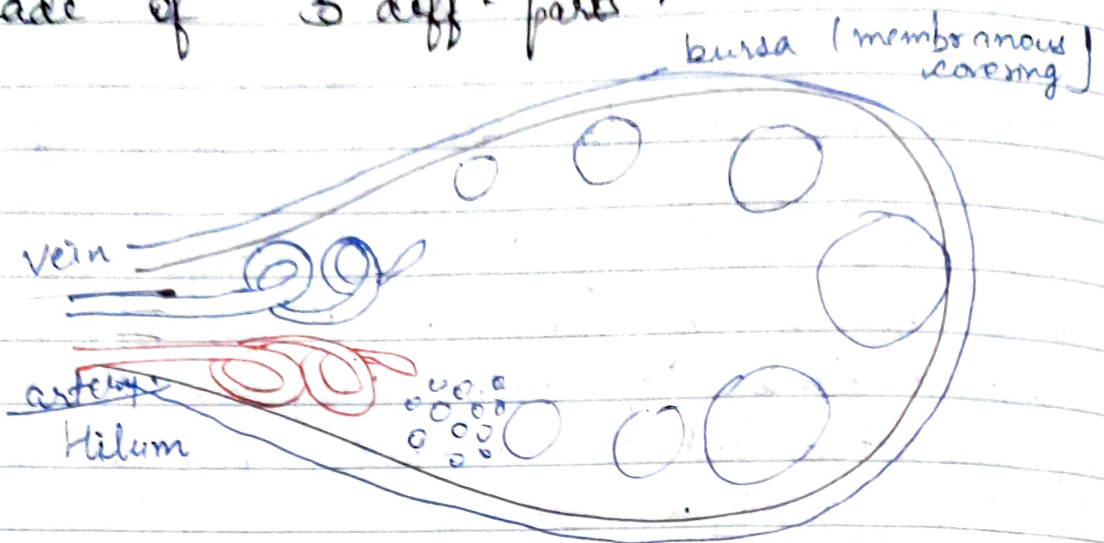
MPF ^{consists of} 1) 34 CDC kinase
(Meiotic promotive factor) 2) Cyclin B

→ Anatomy of ovary:

wt = 50g

- Lies in either sides of pelvic cavity.

- Made of 3 diff. parts.



Ovary consists of cortex, central medulla and terminal hilum.
- It is through hilum which, b. vessels and nerve supply is given to ovary.

- Once follicle becomes mature it releases ovum.

- Bursa is found in most of mammals but not in all.

- Medulla contains c. tissue, interstitial cells, b. vessels, lymph, nerve supply etc.

* FOLLICLE *

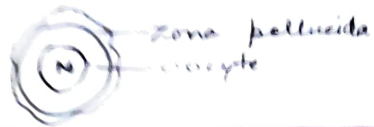
3 or 4 components.

A) Oocyte - give rise to egg.

Nucleus of oocyte is very large. Due to their large size it is known as germinal vesicle.

B) - Oocyte is surrounded by a gelatinous, non-cellular str. called zona-pellucida. B/w ovulation and implantation, it protects egg. Z. pellucida has sperm specific receptors so it allows only sperm.

• zona layer on egg
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of some spp to penetrate through z. pellucida.
- Z. pellucida is secretion of oocyte and granulosa cells and it consists of 3 type of glycoprotein

- (i) = 1
- (ii) = 2
- (iii) = 3